

Health Awareness Package to Avert Helicobacter Pylori Infection among Family Members

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Abstract

Helicobacter pylori are common bacteria that cause pain and may lead to ulcers or stomach cancer. The awareness package is a process that educates family members to promote their knowledge and practice towards the prevention of infection. **Aim:** Evaluate the effect of a health awareness package to avert helicobacter pylori infection among family members. **Design:** A quasi-experimental design was utilized. **Setting:** The study was carried out in the internal medicine outpatient clinic at Helwan General Hospital. **Sample:** A purposive sample includes seventy-five family members. **Tools:** An interview questionnaire was used, it included three parts: Part I. Family member's socio-demographic characteristics. Part II. Knowledge about Helicobacter pylori infection. Part III. Reported practices. **Results:** Slightly three-quarters of the family members' had poor knowledge pre-package, while more than three-quarters of them had good knowledge after the health awareness package. Also, there was a radical satisfactory improvement among the majority of family members' total score of reported practices after the health awareness package in the post-test rather than of the pre-test. (P-value = 0.000). There was a statistically significant strong direct correlation between total scores of pre and post-knowledge and reported practices of health awareness package ($p < 0.001$). There were highly statistically significant relationships between family members' total scores of knowledge and reported practices and socio-demographic characteristics. **Conclusion:** Utilization of health awareness packages achieving significant improvements in the family members' knowledge and practice. Also, there was a positive correlation between total scores of knowledge and reported family members' practices and their socio-demographic characteristics. **Recommendations:** Healthy hygienic guidelines are needed to avert the incidence of H. Pylori infection and strengthen the knowledge and practices among high-risk populations and low socioeconomic families.

Keywords: Health awareness package, Helicobacter pylori, Family members

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Introduction

Helicobacter pylori (*H. pylori*) are a global issue with increasing rates of infection making it one of the most damaging human pathogens (Nagy et al., 2016). This infection remains one of the most common chronic bacterial infections affecting humans (Contreras et al., 2017).

H. pylori are motile, Gram-negative bacteria that is endemic in Africa and Asia; the two regions contributing two-thirds of the world's disease burden. In developing countries, 70 - 90% of the population harbor *H. pylori*, which is mostly acquired during childhood, while in the developed ones, the prevalence is lower ranging from 30 to 40%. It differs from one country to another and even within the same country (Bello et al., 2018).

In both developing and developed countries, the high prevalence of *H. pylori* is linked with poor socioeconomic conditions, such as overcrowded housing, low income, older siblings, and large family size this considered key elements that increase the risk of *H. pylori* infection (Abongwa et al., 2017).

The mode of transmission *H. pylori* infection is not completely known, but person to person either fecal-oral or oral routes is the main route of transmission of this infection, followed by contamination of food and water (Sethi et al., 2013).

Helicobacter pylori are a bacterium that is commonly found in the stomach. Most people infected with *H. pylori* have no problems. However, some people develop problems, such as stomach

ulcers. Ulcers may cause no symptoms or may cause symptoms like pain or discomfort in the upper abdomen, bloating, feeling full after eating a small amount of food, lack of appetite, nausea, vomiting, and dark or tar colored stools (Crowe, 2018).

Screening and prevention of *Helicobacter pylori* among high-risk groups may reduce certain diseases, test and treat should be individualized based on comorbid illness and client preferences. These high -risk populations include individuals with several potential indications, confirmed history of peptic ulcer disease, and gastric lymphoma (Chey et al., 2017).

Health awareness is the state of being aware and having knowledge about healthy something. More specifically, is the ability to directly know and perceive, to feel, or to be cognizant of healthy events (Merriam-Webster Dictionary, 2020). Health awareness package for the family members, especially mothers, fathers, and grandmothers about personal hygienic practice, good sanitary conditions, safe water supplies, and food preparation habits, participating screening, therapy, and follow up for recurrence is very important especially for who have infectious gastrointestinal problems. All of these items are important steps to prevent *H. pylori* infection for all family members (Yucel, 2014).

Community health nurse plays an important role in promoting health care awareness among different segments of society focus on disease prevention and changing the behavior of individuals through creating health awareness. The nurse provides members with the

information they need to manage and improve their health. They focus on issues that are negatively affecting the health and give health education to family and community members to be aware of health practices that they should make as habits or stop and ensuring access to the resources needed to improve healthy behavior (**Kemppainen et al., 2012**).

Significance of the study:

Helicobacter pylorus is a common chronic infection that can lead to devastating consequences. It is estimated that half of the world's population is infected with *H. pylori*. It is a widespread and endemic disease, especially in developing countries. In the Middle East, *H. pylori* prevalence ranges from 60-90%. In Egypt, the prevalence of *H. pylori* infection is high up to 90% in adults (**Wadea and El Hawary, 2018**). About 20 to 25% of adults with active *H. pylori* infection will eventually develop significant pathologies such as peptic ulcer disease or gastric cancer, yet there is evidence that the medical community is not doing an effective job in the identification and treatment of *H. pylori* (**Harrison and Vega, 2019**).

The childhood was identified as the critical time for acquisition of *H. pylori* infection also mothers and father play a key role in the transmission of this infection to all family members, the current recommendations that designed to establish the best practice in the prevention of *H. pylori* infection is needed. Community health awareness is an essential aspect of preventative healthcare. Therefore, it is very crucial to do a health awareness

package to prevent *Helicobacter pylori* infection among family members.

Aim of the study:

To evaluate the effect of health awareness package to avert *Helicobacter pylori* infection among family members through the following objectives:

- 1- Assess the family members' knowledge about *H. pylori* infection to determine educational needs.
- 2- Assess the family members reported practice regarding healthy hygienic, diet, and eating practice.
- 3- Develop and implement a health awareness package about *H. pylori* Infection to satisfy participant needs.
- 4- Evaluate the effect of health awareness package on *H. pylori* infection.

Research Hypotheses:

H1. A health awareness package will be effective in enhancing the family members' knowledge and practices about *H. pylori* infection.

H2. There will be a significant correlation between knowledge and practices regarding *H. pylori* infection for family members.

H3. There will be a significant correlation between family members' knowledge and practices regarding *H. pylori* infection with their socio-demographic characteristics.

Subjects and Methods

Research design

A quasi-experimental research design was utilized in this study.

Setting:

The study was carried out in the outpatient clinic (internal medicine) at Helwan General Hospital, Helwan district, Egypt.

Sample:

A purposive sample includes 75 family member, they were selected according to this inclusion criteria:

- Age from 20- 50 years.
- Agreed to participate in the study.
- Read and write.

Sample size calculation:

Based on the flow rate obtained from the Helwan general hospital information system within the period of data collection time the total population = 92 and according to Solvin's formula for sample size calculation the required sample was 75 members (Yamane, 1967).

$$n = \frac{N}{1+N(e)^2} = 74.7 \cong 75 \text{ members}$$

Where:

- n= Corrected sample size.
- N = Population size.
- e = Margin of error, and e = 0.05 based on the research condition.

Study tool and technique of data collection:

An interview questionnaire sheet was designed by the researchers to collect the necessary data after revising related literature. It was written in simple Arabic language and it consisted of three parts.

Part I: Covered the family member's socio-demographic characteristics, such as age, gender, educational level, occupation, and family history of infectious diseases, No. of family, No. of children, No. of rooms, crowding index....etc.

Part II: Involves questions about family member's knowledge about H. pylori infection. It consisted of 9 questions such as meaning, causes, risk group, symptoms, diagnosis, complications, prevention of H. pylori... etc.

Scoring system for knowledge:

Knowledge obtained from family members was checked with a model answer, and scored as the following: Complete correct answer takes "three", while the incomplete answer takes "two" and a wrong answer or don't know takes "one". The total score was converted into percentage and construed as follows:

- 1- Poor < 60% with score ranged from 0-9 marks.
- 2- Average 60 - 70% with scores ranged from 10-18 marks.
- 3- Good >70% with scores ranged from 19-27 marks.

Part III: Family members reported practices; it filled in by the researchers and used to assess family members reported performed practices regarding:

- 1- Healthy hygienic practice about clean skin and hand washing, clean the nails and clean the teeth.

- 2- Healthy family diet practice as eat three main meals daily, eating from food handlers, decrease spice in food, drink 2-3 liters of water daily, and lack of diversification in foods eaten in the meal.....etc.

Scoring system for practice:

The performed complete practice was scored "three", while the performed partially was scored "two" and not performed scored " one". The total practice was categorized as the following:

- Satisfactory if the total score was 60% or more (≥ 54 marks)
- Unsatisfactory if the total score was less than 60% (< 54 marks).

II. Operational Design

a- Preparatory phase:

This phase encompassed reviewing past and currently available literature and the different studies related to H. pylori using books, articles, magazines, and the internet to get a clear picture of the research problem and develop the study tools for data collection.

• Validity of tools

The study tools were tested for validity through the opinions of 5 experts in Community Health Nursing and statistics.

• Reliability of the tools

The reliability test for the present study tools was established by using Cronbach's alpha which showed good internal consistency and good reliability as follows: Knowledge tool (Cronbach's alpha = 0.79) and practice tool (Cronbach's alpha = 0.82).

• Ethical considerations

The required written approval was obtained from the Helwan General Hospital director to apply this study for family members attended the internal medicine outpatient clinic. The study participants' oral consent was obtained to participate in the study. The researchers clarified the objectives of the study to the participants and ensured complete privacy and confidentiality of any information. They also have the right to participate or withdraw from the study at any time without giving any reason.

b- Pilot study

A pilot study was done on 10% of the study sample to evaluate tools clarity, applicability, and feasibility and to estimate the time needed for filling in the tools. The pilot study data were analyzed and no modifications were done on the study tools. So, those who participated in the pilot study were included in the main study sample.

c- Fieldwork

The study was conducted over 6 months from the 15th of March to the 15th of August 2020. The researchers started by introducing themselves to the family members and verbal consent were obtained from each participant. The participants were informed of the aim of the study. Each participant was interviewed separately and the answers were marked by the researchers, about 20 minutes was needed to complete the questionnaire. After that, the health awareness package about H. pylori was implemented. Then, the initial data were collected from the family

members. The results were analyzed statistically and manually prepared, and the package was implemented for them based on educational needs. After completion of the health awareness package implementation, the evaluation of the family members was carried out by using the same research tools. The researchers were presented in the internal medicine outpatient clinic 2 days/week, from 9 a.m.: 2 p.m.

The application of a health awareness package was carried out in four phases:

Phase I: Assessment phase: It consisted of the pretest after the approval taken to carry out the study, the researchers greeted the participants, and introduced themselves to them also, explained the aim of the study. An analysis of the obtained pretest collected data was then done to help in the design of the health awareness package.

Phase II: Planning phase: It involved designing the topics, which were organized according to the needs of the study participants and the general objective to increase knowledge and practices of family members about H. pylori infection, this achieved through the application of a health awareness package, this based on analysis of the actual needs in pre-assessment by using the pre-test tools. A booklet was prepared by the researchers, in simple Arabic language and consistent with the related literature. The content of the booklet included data about: Meaning of H. pylori, causes, risk group, symptoms, diagnosis, complication, prevention, and type of food allowed and not allowed during HB-pylori

infection. As well as performed healthy hygiene and healthy family diet practices.

Phase III: Implementation phase:

The health awareness package designed by the researchers in simple Arabic language and sessions began with an orientation about the program and its objectives. The researchers interviewed members of the families in a separate room. First, they introduced themselves to the participant and gave them a brief idea about the package topics. The time was different from one session to another to accomplish awareness package sessions and practice training. Every session took about 30-45 minutes. The total number of members was 75 divided into 10 groups each contains 7-8 members, the health awareness package was applied in 4 sessions for every group, 2 sessions cover the theoretical part, which included: Meaning of H. pylori, causes, risk group, symptoms, diagnosis, complication, prevention, and type of food allowed and not allowed during HB-pylori infection. And 2 sessions cover the practical part as performed healthy hygiene and healthy family diet practices.

The teaching methods are designed and developed based on their assessment needs and include lectures, group discussions, and role-play to perform healthy practices. The media was a booklet, pictures, and show a laptop screen.

Phase IV: Evaluation phase: It includes a post-test done one time immediately after the health awareness package by using the same formats of

the pre-test tools to assess the effect of the health awareness package.

III. Administrative Design

The present study was carried out after taking official permission from the faculty of Nursing Dean to the administrator of the outpatient clinic (internal medicine) at Helwan General Hospital to collect the data. As well, the aim and expected outcomes of the study were explained clearly.

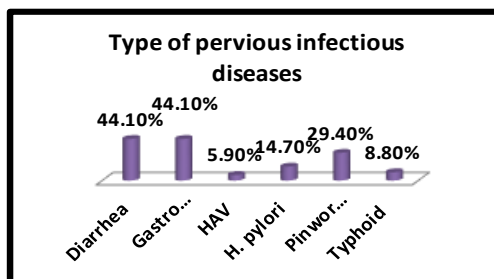
IV- Statistical Design:

Data entry and statistical analysis were performed using personal computer software, the statistical package for social sciences (SPSS), version 20. Suitable descriptive statistics were used such as; frequency, percentage, mean and standard deviation. A Chi-square test was used to detect the relation between the variables. Also, the correlation coefficient (r) test was used to estimate the closeness association between variables. A paired (t) test was used to compare the mean score between both studied variables. The p-value is the probability that an observed difference is due to chance and not a true difference. A significant level value was considered when the p-value ≤ 0.05 and a highly significant level value was considered when the p-value ≤ 0.001 , while p-value > 0.05 indicates non-significant results.

Results:

Table (1) Indicates that the mean age of family members included in the study was 33.79 ± 10.6 , and 70.7% of them were females. Regarding their

educational level, 50.7% were secondary education. As well as, 40.0% of the studied sample was not working. Concerning the means of children's age within the family members were 10.40 ± 4.562 years. As well as about 45.3 % of family members' reported that they had a family history of infectious diseases. Also, 68.0% of the family members included in the study were nuclear families. The mean and standard deviation of the no. of family members was 4.77 ± 1.485 . Also, 62.7% of them had about (1-2) children attending schools. Regarding, their crowding index about 60.0% of family members' had (2-3) members per room. As well as, 57.3% of them their place of residence was the city.



* Total responses are not mutually exclusive

Figure (1): Distribution of Previous Family History of Infectious Diseases (No. = 34).

Figure (1): Displays that the most common previous infectious diseases among family members' were diarrhea, gastroenteritis, and pinworms, which were 44.1%, 44.1 %, and 29.4% respectively. Additionally, about 14.7% of them had a history of H. pylori infection.

According to the study hypothesis which confirmed that the health awareness package improved family members' knowledge, and practices about helicobacter pylori

infection it will be discussed through the following parts of study results; tables (2,3,4,5,6,7) and figures (3&4).

Table(2): Explains that in the pre-test the vast majority of the family members' means \pm SD in all knowledge items were very low which indicated that they didn't have any knowledge about Helicobacter-pylori. After implementing the health awareness package, there were highly statistically significant improvements were observed in the family members' mean scores in all tested items of knowledge ($P < 0.000$)

Table (3): Clarifies that there was a highly statistically significant improvement in all items of reported healthy hygienic practice pre and post health awareness package (p -value = 0.000).

Table (4): Illustrates the highly statistically significant differences between family members' pre/ post health awareness package regarding reported healthy dietary practices in all items with (p -value = 0.000).

Table (5): Reveals that there were detected statistically significant strong direct correlation between total scores of pre and post knowledge and total scores of pre and post reported practices of health awareness package ($p < 0.001$).

Table (6): Confirms highly statistically significant relationships between family members' socio-demographic characteristics' such as educational level, and no. of family members, and crowding index regarding total scores of knowledge pre and post health awareness package ($P = 0.000$). As well, a statistically significant relationship between age and family

history of infectious disease regarding total scores of knowledge pre and post health awareness package ($p < 0.05$).

Table (7): Demonstrates statistically significant relationships between family members' educational level and no. of family members with their total scores of reported practices pre and post health awareness package where ($p < 0.05$). As well as, a highly statistically significant relationship between occupation, family history of infectious disease and crowding index with total scores of reported practices with ($p = 0.000$)

Table (1): Frequency Distribution of the Family Members' Socio-demographic Characteristic (No.= 75).

Characteristics	No.	%	Mean ± SD	Characteristics	No.	%	Mean ± SD
Age :				Family type:			
- < 20-	8	10.7		- Extended	24	32.0	
- 30-	28	37.3	33.79 ±	- Nuclear	51	68.0	
- 40-	25	33.3	10.6				
- >50-	14	18.7					
Gender:				No. of family members:			
- Male	22	29.3		- 2-4	43	57.3	4.77 ±
- Female	53	70.7		- 5-9	32	42.7	1.485
Educational level:				No. of children attending school:			
- Primary	25	33.3		- No children	9	12.0	2.18 ±
- Secondary	38	50.7		- 1-2	47	62.7	1.051
- University	12	16.0		- 3-5	19	25.3	
Occupation:				No. of rooms:			
- Not working	30	40.0		- 1-2	56	74.7	2.28 ±
- Hand working	20	26.7		- 3≤	19	25.3	0.534
- Free Working	13	17.3					
- Professional	7	9.3					
- Employee	5	6.7					
Children Age Within family:				Crowding index:			
- < 10	38	50.7	10.40 ±	- >1	13	17.3	2.55 ±
- 11-15	28	37.3	4.562	- 2-3	45	60.0	0.86
- ≥ 16	9	12.0		- 3<	17	22.7	
Family history of infectious diseases:				Place of residence:			
- Yes	34	45.3		- Village	32	42.7	
- No	41	54.7		- City	43	57.3	

Table (2): Mean Scores and Standard Deviation for Family Members’ Knowledge Items Pre, and Post-Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Knowledge Items	Pre-Health Awareness package	Post – Health Awareness package	Paired t. test	P-value
	Mean ± SD	Mean ± SD		
Meaning of Helicobacter pylori	1.09±0.336	1.25±0.572	2.803	.006**
Causes of H. pylori	1.15±0.456	2.23±0.815	10.998	0.000**
Risk group H. pylori	1.11±0.352	2.35±0.846	11.578	0.000**
Symptoms of H. pylori	1.12±0.366	2.36±0.799	12.380	.000**
Diagnosis of H. pylori	1.12±0.401	2.17±0.876	9.393	0.000**
Complication of H. pylori	1.16±0.466	2.39±0.769	12.089	0.000**
Prevention of H. pylori	1.19±0.485	2.39±0.804	10.685	0.000**
Type of food allowed during H. pylori infection	1.17±0.503	2.37±0.767	11.175	.000**
Type of food not allowed during H. pylori infection	1.25±0.617	2.48±0.795	11.500	0.000**
Total Scores = 27 degrees	10.36±3.034	19.98±5.022	13.569	0.000**

**Highly statistical significant at p<0.001

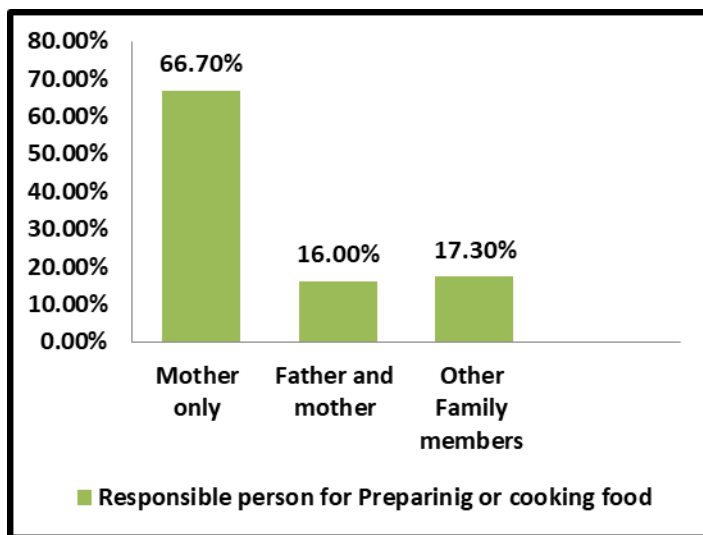


Figure (2): Distribution of Family Members’ Responsible for Preparing and Cooking Food (No= 75).

Figure (2): Shows that 66.7% of family members’ reported that mothers were the only responsible person for food cooking and preparation and only 16.0% of them reported that father and mother sharing this responsibility.

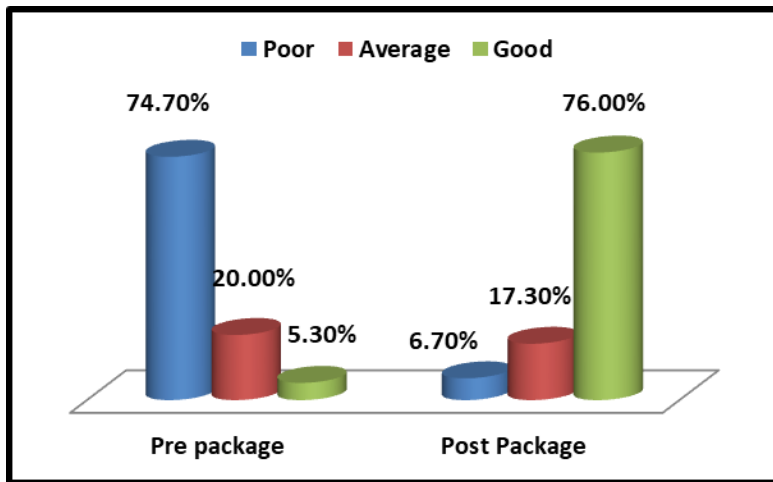


Figure (3): Distribution of Total Scores of Family Members' Knowledge Pre, and Post-Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Figure (3): Presents that there was a marked improvement among family members' total score of knowledge pre and post health awareness package. As well as the figure shows that 74.7% of the family members' had poor knowledge pre-package, while 76.0% of them had good knowledge after the health awareness package.

Table (3): Percentage Distribution of Family Members' Reported Performed and Un-performed Healthy Hygienic Practice Items Pre & Post -Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Reported Healthy Hygienic Practice Items	Pre Health Awareness Package			Post Health Awareness Package			Paired t. test	P-value
	Don't perform %	Partial Perform %	Complete perform %	Don't perform %	Partial Perform %	Complete perform %		
Clean the skin and handwash:								
Washing hands before eating	64.0	17.3	18.7	17.3	10.7	72.0	9.170	0.000**
Washing hands after eating	58.7	25.3	16.0	17.3	13.3	69.3	8.972	0.000**
Wash hands after using the bathroom.	62.7	18.7	18.7	18.7	5.3	76.0	9.512	0.000**
Washing hands after playing	74.7	12.0	13.3	22.7	8.0	69.3	3.515	0.001**
Hand washing when returning from school	77.3	13.3	9.3	22.7	17.3	60.0	10.061	0.000**
Wash hands after sneezing or coughing	80.0	10.7	9.3	21.7	14.7	62.7	10.095	0.000**
Wash face using soap and water always	80.0	12.0	8.0	24.5	16.0	60.0	9.732	0.000**
Bathing constantly using warm water and soap especially in the summer	81.3	14.7	4.5	26.7	17.3	56.0	10.215	0.000**
Do not use others personal equipment's	81.3	13.3	5.3	24.0	17.0	58.7	10.095	0.000**
Clean the Nails:								
Always trim nails	56.0	26.7	17.3	4.0	12.0	84.0	11.879	0.000**
Use of special scissors	69.3	25.3	5.3	5.3	18.7	76.0	13.529	0.000**
Keep nails clean always.	66.7	30.7	2.7	36.0	25.0	38.7	6.484	0.000**
Clean the teeth :								
Wash teeth daily after each meal	94.7	2.7	2.7	21.3	40.0	38.7	12.231	0.000**
Do not use the brush of others	92.0	5.3	2.7	13.3	29.3	57.3	14.239	0.000**

** Highly statistical significant at p value < 0.001

Table (4): Percentage Distribution of Family Members' Reported Performed and Un-performed Healthy Family Diet Practices Items Pre & Post Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Reported Healthy Family Diet practices	Pre Health Awareness Package			Post Health Awareness Package			Paired t. test	P-value
	Don't perform %	Partial Perform %	Complete Perform %	Don't perform %	Partial Perform %	Complete Perform %		
Eat three main meals daily	58.7	24.0	17.3	21.3	32.0	46.7	6.844	0.000**
decrease spice in food	93.3	6.7	0.0	38.7	21.3	40.0	9.121	0.000**
Drink 2-3 liters of water daily	85.3	12.0	2.7	34.7	18.7	46.7	9.616	0.000**
Lack of diversification in foods eaten in the meal	77.3	17.3	5.3	20.0	26.7	53.3	10.323	0.000**
Usually eating at home	74.7	18.7	6.7	21.3	25.3	53.3	9.312	0.000**
Drink milk daily	89.3	10.7	0.0	21.3	36.0	42.7	11.309	0.000**
Avoid canned and preserved foods	93.3	1.3	9.3	25.3	32.0	42.7	8.868	0.000**
Be careful to wash vegetables and fruits well before eating.	89.3	1.3	9.3	25.3	32.0	42.7	9.365	0.000**
Avoid sharing utensils during eating and drinking, such as spoons and cups.	66.7	26.7	6.7	21.3	36.0	42.7	4.327	0.000**
Keep away from fast food and exposed to air and flies	84.0	10.7	5.3	35.7	48.0	21.3	8.385	0.000**
Avoid processed foods containing artificial colors and preservatives	85.3	5.3	9.3	22.7	45.3	32.0	9.235	0.000**
Eat foods containing fiber and omega 3, like fish, vegetables, and garlic.	89.3	6.7	4.0	26.7	46.7	26.7	9.235	0.000**
Drink coffee, tea, and nescafé.	81.3	13.3	5.3	21.3	41.3	37.3	9.740	0.000**
Stay away from eating pickles.	81.3	12.0	6.7	22.7	38.7	38.7	9.519	0.000**
Avoid foods that contain chili pepper.	81.3	16.0	2.7	22.7	40.0	37.3	9.549	0.000**
Avoid eating citrus and citrus	61.3	16.0	2.7	25.3	36.0	38.7	9.967	0.000**

**Highly statistical significant at $p \leq 0.001$

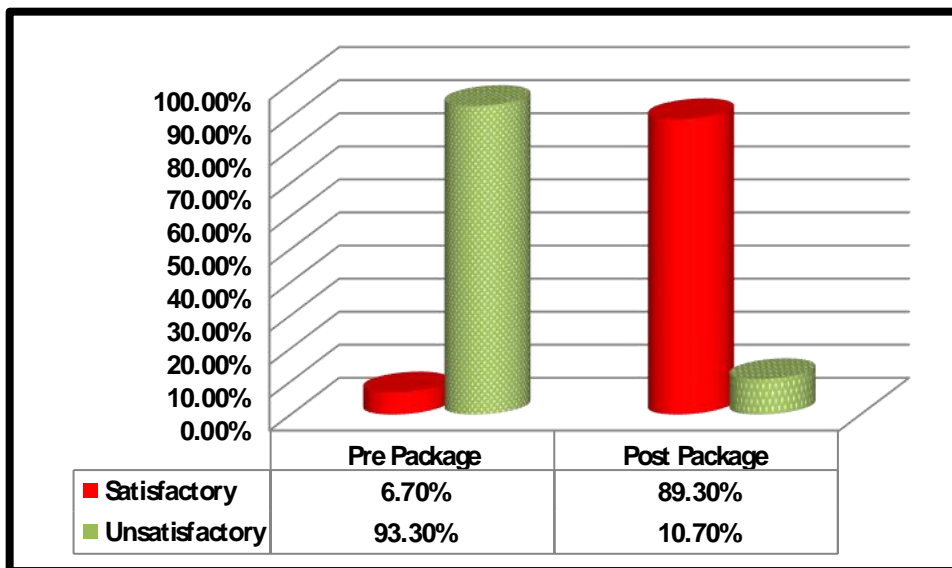


Figure (4): Distribution of Family Members’ Total Scores of Reported Practices Pre& Post-Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Figure (4): Presents that, there was a radical satisfactory improvement in family members’ total score of reported practices after the health awareness package to be 89.3% in the post-test rather than of 6.7% in the pre-test.

Table (5): Correlation between Family Members’ Total Scores of Knowledge, and Reported Practice Items Pre and Post Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Item	Total scores of knowledge			
	Pre- Health Awareness Package		Post- Health Awareness Package	
	r	P-value	r	P-value
Reported Practices	0.723	0.001**	0.825	0.000**

*Correlation is significant at 0.001

Table (6): Relation between Family Members' Socio-demographic Characteristics, with Total Scores of Knowledge Items Pre and Post-Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Socio-demographic Characteristics	Total scores of Pre- knowledge			X2 P-value	Total scores of Post- knowledge			X2 P-value
	Good No.	Average No.	Poor No.		Good No.	Average No.	Poor No.	
Educational level :								
- Primary	0	7	18		19	3	3	
- Secondary	2	7	29	0.315	26	10	2	0.843
- University	2	1	9	0.006**	12	0	0	0.000**
age :								
- < 20-	0	2	6	0.843	6	2	0	0.257
- 30-	2	5	21	0.000**	23	3	2	0.026*
- 40-	1	2	22		20	5	0	
- >50	1	6	7		8	3	3	
Family history of infectious diseases:								
- Yes	3	6	25	0.292	27	3	4	0.409
- No	1	9	31	0.011*	30	10	1	0.058*
No. of family members:								
- 2-4	2	10	31	0.534	31	10	2	0.655
- 5-9	2	5	25	0.000**	26	3	3	0.000**
Crowding index:								
- >1	0	1	12	0.476	13	0	0	0.468
- 2-3	4	9	32	0.000**	31	10	4	0.000**
- 3<	0	5	12		13	3	1	

Table (7): Relation between Family Members' Socio-demographic Characteristics, and Total scores of Reported Practice Items Pre, Post-Health Awareness Package about Helicobacter Pylori Infection (No. = 75).

Socio-demographic Characteristics	Total scores of Pre- Practice		X2 P-value	Total scores of Post- Practice		X2 P-value
	Satisfactory No.	Unsatisfactory No.		Satisfactory No.	Unsatisfactory No.	
Educational level :						
- Primary	0	25	0.238	20	5	0.292
- Secondary	2	36	0.041*	36	2	0.011*
- University	3	9		11	1	
Occupation :						
- Not working	0	30		25	5	
- Hand working	0	20		17	3	0.544
- Free Working	1	12	0.485	13	0	0.000**
- Professional	2	5	0.000**	7	0	
- Employee	2	3		5	0	
Family history of infectious diseases:						
- Yes	3	31	0.464	30	4	0.779
- No	2	39	0.000**	37	4	0.000**
No. of family members:						
- 2-4	4	39	0.230	38	5	0.237
- 5-9	1	31	0.047*	29	3	0.041*
Crowding index:						
- >1	1	12	0.483	13	0	0.536
- 2-3	4	41	0.000**	39	6	0.000**
- 3<	0	17		15	2	

Discussion:

Helicobacter pylori (*H. pylori*) infection remains a significant public health concern. Based on compelling evidence, the World Health Organization has classified *H. pylori* as a group I carcinogen leading to gastric adenocarcinoma and recently highlighted the ranking of *H. pylori* in the priority list of research (Yong et al., 2020). So, averting *H. pylori* infection is an appealing requirement to prevent related gastrointestinal diseases and reduces the risk of peptic ulcer and gastric cancer especially among family members with low socio-demographic, poor hygienic, and dietary habits. Hence a lot of epidemiological studies have confirmed a high association of *H. pylori* infection with these factors (Kobayashi et al., 2019).

Part I: Socio-demographic characteristics and family history of infectious diseases:

Regarding the mean age of involved family members' was 33.79 ± 10.6 , less than three quarters were female, about half of them were secondary education, near two-fifths were not working and the mean age of children within these families was 10.40 ± 4.562 . These results in agreement with Nguyen et al. (2017) who conducted their study in Vietnam about the prevalence and risk factors of *Helicobacter pylori* infection in Muong children and stated that 40.1% of the studied samples were females, 54.9% were secondary education, 45.5 % of family members had an occupation. This finding was also persistent with Al-Hussaini et al. (2019), who carried out a study about *Helicobacter pylori* infection

among healthy children in Saudi Arabia and pointed that the mean age of the family members' children was 11.22 ± 2.62 years. As well, the study conducted by Bakhti et al. (2020) a cross-sectional study in Iran among healthy families about "Childhood hygienic practice and family educational level" to determine the prevalence of *Helicobacter pylori* infection and noted that 32.9% aged ≥ 25 years. 58.5% were females and 95% were university education. They confirmed in their research that family members' educational level especially mothers' educational level had a protective effect against *H. pylori* infection. This variation of results between studies is probably due to differences in the study design, family members' criteria, sample size, and techniques used for conducting the study.

Concerning the family history of infectious diseases, the current study revealed that near half of them reported that they had a family history of infectious diseases like diarrheal diseases, gastroenteritis, and *H. pylori*. This results in the same line with the study titled "The relation between *Helicobacter pylori* infection and acute bacterial diarrhea in children compared with healthy controls in Iran" by Monajemzadeh et al. (2014), who confirmed that 65% of the studied sample had a history of diarrheal disease are not infected with *H. pylori*. Also, this result was contradictory with Perry et al. (2016), in California about "Gastroenteritis and transmission of *Helicobacter pylori* infection in households" and indicated that 75% of the studied sample had a history of

bacterial gastroenteritis had positive *H. pylori* or may to be the risk factor. This postulated that there was an urgent need to raise health awareness about *H. pylori* infection prevention and conducting as well as screening programs for all those who had a history of infectious diseases for early detection of *H. pylori* infection.

Continuing the socio-demographic characteristics of the family members, the current study reveals the following more than two-thirds were nuclear family type, more than half of them had from two to four persons with one or two children attending school. Also, slightly less than three-quarters of them had from one to two rooms. Regarding the crowding index, more than three-fifths of the family members' had also two to three persons inside rooms, and more than half of them their place of residence was the city. These results came with the results of **Ueda et al. (2019)**, in their study about the occurrence of the *H. Pylori* in saliva among preschool-age children in Japan who pointed that about 50% of their studied sample had low socio-demographic, a poor sanitary condition that provided evidence for a close relationship between the socio-demographic characteristics including crowding index and *H. Pylori* infection rate. This from the researchers' points of view reflected that low socio-demographic conditions presented in a highly crowded living condition known to be risk factors that contribute to the acquiring and transmission of *H. Pylori* infection.

Part II: Effect of health awareness package on the family members' knowledge:

The results of the present study reflected that more than three-quarters of the family members had good total scores of knowledge in the post-test rather than of the post-test after the health awareness package. As well, the results of the current study revealed that there was a radical improvement in the mean scores of family members' knowledge items in the post-test rather than pre-test with highly statistically, significant improvements in all tested items ($P < 0.000$). These results are supported by **Driscoll et al. (2017)**, whose study about population knowledge, attitude, and practice regarding *Helicobacter pylori* transmission and outcomes in the State of Arizona. They found from a literature review of six studies general knowledge about *H. pylori* was poor across all studies only 22–35% of respondents know the meaning and cause of *H. pylori* and 26% of the participants known the symptoms, risk factors, and mode of transmission. This from the researchers' opinion confirmed that the greater need for conducting health awareness package as well as educational programs for raising the public and family members' health knowledge about the prevention of *H. pylori* infection and the present study results confirmed the positive effect of this health awareness package.

Part III: Effect of health awareness package on Family members' practice:

The finding of this study indicated that regarding the hand hygienic practices more than half of the family members were not performed in the pre-package while after the package was improved to be near three-quarters of the family members' reported complete hand

washing before eating and after using the bathroom also, the majority of the studied sample completely trim of their nails in the post-test. Furthermore, there was a highly statistically significant improvement in all items of reported healthy hygienic practice pre and post health awareness package (p-value = 0.000).

This study was in the same line with a study done by **Abebaw et al. (2014)**, who performed a study about the prevalence and risk factors of *H. pylori* in north Ethiopia and found that 72.2% had poor bad hand washing after toileting, and before eating. In agreement with the study carried out among family members by **Nguyen et al. (2017)**, who conducted a study about “prevalence and risk factors of *Helicobacter pylori* infection in Vietnam”. They illustrated that 44.8% of the family members conducted regular hand washing after defecation. As well as 44.1% who were practicing hand washing before and after meals and ensured that low hygienic practices had a close relationship with the high transmission of *H. pylori* among family members. These results from the researchers' field experience could ensure that personal hygienic practices have an association with the infection of *H. pylori* and the positive effect of the health awareness package in improving the family members' hygienic practice and internally could avert *H. pylori* infection.

Regarding family members who reported food preparation practices, the present study indicated that near half of the studied sample reported they eat regular three meals and decrease the spices, drink milk daily in more than half of the studied sample. Forty-eight percent

of them still partially eat fast food after the package with a highly significant relation between pre and post-package tests (p=0.000).

In the same direction with **Sjomina et al. (2018)**, who conducted an observational study in 166 family members in Portugal about the epidemiology of *H. pylori* infection and showed that regarding the family members food preparation practices a high association between their lack of fruit, vegetable, high intake of fried fast food as well as lack of milk intake and increase intake of coffee, tea, and cigarettes with the high incidence of *H. pylori* p<0.001. As well these results in agreement with **Driscoll et al. (2017)** a literature review study about “knowledge, practice, and attitude of community population about *H. pylori* infection” and found only 22% had performed food preparation related practices. With the great association between socio-demographic with their total related practice. This could reflect the urgent need for regular recurrent Health educational and health awareness package to avert awareness as well as disseminate the information to avert *H. pylori* infections.

The present study confirmed that there was a radical satisfactory improvement in family members' total score of reported practices after the health awareness package as the vast majority in the post-test rather than of minority in the pre-test. This could ensure the success of the health awareness package on the improvement of family members' healthy reported practices about *H. pylori* infection.

This part verified the research hypothesis **H₁** which stated that the family members' knowledge and reported practices will be improved after the health awareness package.

The current study was detected a statistically significant strong positive correlation between total scores of knowledge and reported practices pre and post health awareness package ($p < 0.001$). This study agreed with **Aravindalochanan et al. (2012)**, in China about the effect of the health awareness package prevention of school childhood obesity and confirmed in this study that the radical positive significant effect on both knowledge and practice reported levels. It means that family members should be acquainted with adequate knowledge related to the prevention of *H. pylori* infection to improve their practices

This part proved the research hypothesis **H₂** which stated there will be a significant correlation between family members' knowledge and practices regarding *H. pylori* infection.

This study also revealed a highly statistically significant relationship between family members' socio-demographic characteristics' such as educational level, and no. of family members, and crowding index regarding total scores of knowledge pre and post health awareness package ($P= 0.000$). As well as, a highly statistically significant relationship between job, family history of infectious disease and crowding index with total scores of reported practices with ($p = 0.000$). These results were reliable with the study accomplished by **Amaral et al. (2017)**, in Iran about "The prevalence of *H. pylori* among adults".

The researchers indicated a highly significant relationship between the low Sociodemographic, low educational level, and overcrowding with low knowledge and practice levels and ensured its close association with possible risk factors for *H. pylori* infection among Iranian family members. This similarity could reflect the possible relation also between the effect of the socio-demographic characteristics on their practices and possible exposure to *H. pylori* infection despite different language, country, and culture.

This part proved the research hypothesis **H₃** which stated there will be a significant correlation between family members' socio-demographic characteristics and their knowledge and practices regarding *H. pylori* infection.

Finally, the results of this study justified the hypotheses that the health awareness package will have a positive effect and improvement in family members' knowledge, and practices to avert *H. pylori* infection.

Conclusion:

Based on the study finding and research hypotheses; it can be concluded that utilization of health awareness packages achieving significant improvements in the family members' knowledge and practice to avert *H. Pylori* infection. Also, there was a positive correlation between total scores of knowledge and reported family members' practices with their socio-demographic characteristics.

Recommendation:

The study recommended that:

- 1- Raise the families' awareness through disseminating booklets about H. pylori infection prevention in all outpatient clinics of general hospitals, and MCH centers.
- 2- Healthy hygienic guidelines are needed to avert the incidence of H. Pylori infection and strengthen the knowledge and practices among high-risk populations and low socioeconomic families.
- 3- Healthy dietary practices training program should be conducted for all family members in the different community setting as MCH centers, schools, and outpatient clinics.
- 4- Implementing health promotion, protection as well as screening in all community settings for early prevention, detection, and management of H. pylori infection.

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